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WEITERE INFORMATIONEN OK

Monday, January 01, 2007

It often pays to wait and learn

Alex Tabarrok writes another of his excellent (but far too infrequent) posts, this time about the problem of global warming and the relative merits of delay versus immediate action:

> Suppose...that we are uncertain about which environment we are in but the *uncertainty will resolve over time*. In this case, there is a strong argument for delay. The argument comes from option pricing theory applied to real options. A potential decision is like an option, making the decision is like exercising the option. Uncertainty raises the value of any option which means that the more uncertainty the more we should hold on to the option, i.e. not exercise or delay our decision.

I agree wholeheartedly, except to stress that the typical problem is not the binary problem of full delay vs. immediate full action, but one of *how much* and what sorts of things to do in this decade versus future decades. In that sense, for global warming it seems to me none too early to set up political agreements and markets we will need to incentivize greenhouse gas reductions. Not to immediately and radically cut down emissions of greenhouse gases -- far from it -- but to learn about, experiment with, and debug the institutions we will need to reduce greenhouse emissions without creating even greater political and economic threats. Once these are debugged, but not until then, cutting greenhouse emissions will have a far lower cost than if we panic and soon start naively building large international bureaucracies.

We already know how to use markets to reduce pollution with minimal cost to industry (and minimal economic impact generally). We now need to learn how to apply these lessons on and international level while avoiding the very real threat of the corruption and catastrophic decay of essential industries that comes from establishing new governmental institutions to radically alter their behavior.

There are tons of theories about politics and economics, practically all of them highly oversimplified nonsense. No single person knows more than a miniscule fraction of the knowledge needed to solve global warming. Political debate over technological solutions will get us nowhere. We won't learn much more about creating incentives to reduce greenhouse gases except by creating them and seeing how they work. As with any social experiment, we should start small and with what we already know works well in analogous contexts -- i.e. what we already know about getting the biggest pollution reductions at the smallest costs.

The costs of the markets -- especially the target auction (and expected exchange) prices of carbon dioxide pollution units -- should thus start out small. In that sense, the European approach under the Kyoto Protocol (the European Union Emission Trading Scheme)

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Nick Szabo

"A premier thinker about history, law and economics, and the lessons they have for security." -- Adam Shostack, Emergent Chaos

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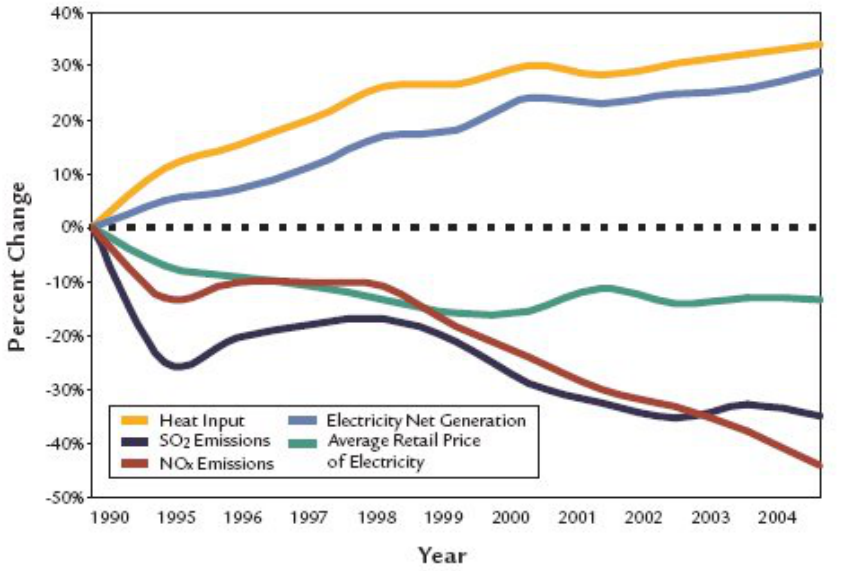
provides a good model even though it has been criticized for costing industry almost nothing so far, and correspondingly producing little carbon dioxide reduction so far. So what? We have to learn to crawl before we can learn to walk. The goal, certain fanatic "greens" notwithstanding, is to figure out how to reduce carbon dioxide emissions, not to punish industry or return to pre-industrial economies. Once people and organizations get used to a simple set of incentives, they can be tightened in the future in response to the actual course of global warming, in response to what we learn about global warming, and above all in what we learn from our responses to global warming.

We already know markets -- and perhaps also carefully designed carbon taxes, but as opposed to micro-regulation and getting the law involved in choosing particular technological solutions -- markets can radically reduce specific pollutants if they specific mitigation decisions are left to market participants rather than dictated by government. And we might learn certain mitigation strategies (perhaps this one, for example) that turn out to be superior to radical carbon dioxide reductions.



Sources: EPA (heat input and emissions) and Energy Information Administration (electricity generation and price values).

Note: Heat input and emissions data reflect Acid Rain Program units. Generation reflects all fossil fuel-fired electricity-only plants in the United States. Retail price reflects full national values for the electricity-generating sector.

Let's set up and debug the basics now -- and nothing is more basic to this problem than international forums, agreements, and exchange(s) that include *all* countries that will be major sources of greenhouse gases over the next century. These institutions must be designed (and this won't be easy!) for minimal transaction costs -- in particular for minimal rent-seeking and minimal corruption. Until we've set up and debugged such a system, it could be far more catastrophic than the projected changes in the weather to impose large costs and create large bureacracies funded by premature "solutions" to the global warming problem.

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As the accompanying illustrations show, a domestic United States programming that left all decisions beyond the most basic and general of market rules to the market participants -- and thus left the specific decisions to those with the most knowledge, here the electric utility companies, and minimized the threat of the rise of a corrupt bureaucracy -- was able to radically reduce sulfur dioxide and nitrous oxides (acid rain causing) pollution. So much so that few remember that acid rain in the 1970s and 80s was a scare almost as big global warming is today. Scientists plausibly argued that our forests were in imminent danger of demise. By experimenting with, learning about, and then exploiting the right institutions, that major pollution threat was, after methodically working through the initial learning curve, rapidly mitigated.

Global warming is an even bigger challenge than acid rain -- especially its international nature which demands the participation of all major countries -- but we now have the acid rain experience and others to learn from. We don't have to start from scratch and we don't need to implement a crash program. We can start with what worked quite well in the similar case of acid rain and experiment until we have figured out in reality -- not merely in shallow political rhetoric -- what will work well for the mitigation of global warming.

Furthermore, it probably will pay to not impose the big costs until we've learned far more about the scientific nature of the problems (note the plural) and benefits (yes, there are also benefits, and also plural) of the major greenhouse gases, and until the various industries have learned how to efficiently address the wide variety and vast number of unique problems for industry that the general task of reducing carbon dioxide output raises. It's important to note, however, that the scientific uncertainty, while still substantial, is nevertheless far smaller than the uncertainties of political and economic institutions and their costs.

To put it succinctly -- we should not impose costs faster than industry can adapt to them, and we should not develop international institutions faster than we can debug them: otherwise the "solutions" could be far worse than the disease.

Figure 16a: Annual Mean Ambient Sulfur Dioxide Concentration, 1989 through 1991

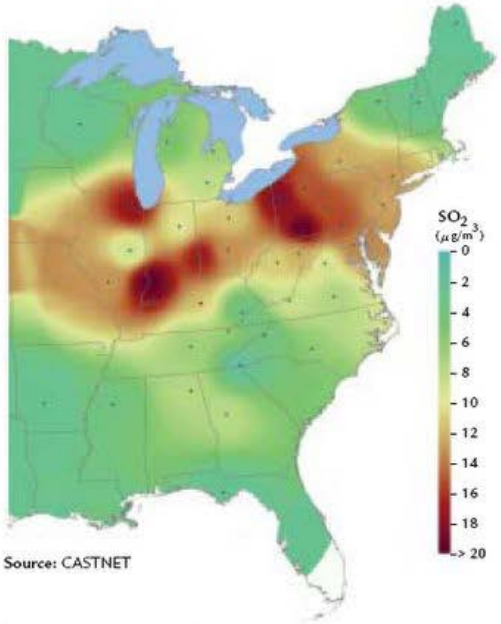


Figure 16b: Annual Mean Ambient Sulfur Dioxide Concentration, 2002 through 2004

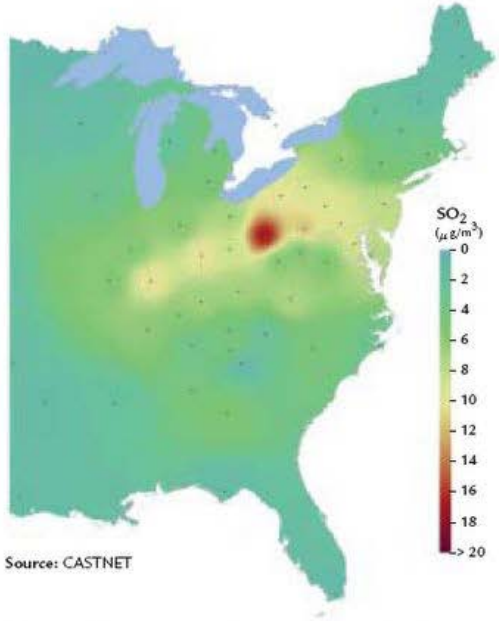


Figure 17a: Annual Mean Ambient Sulfate Concentration, 1989 through 1991

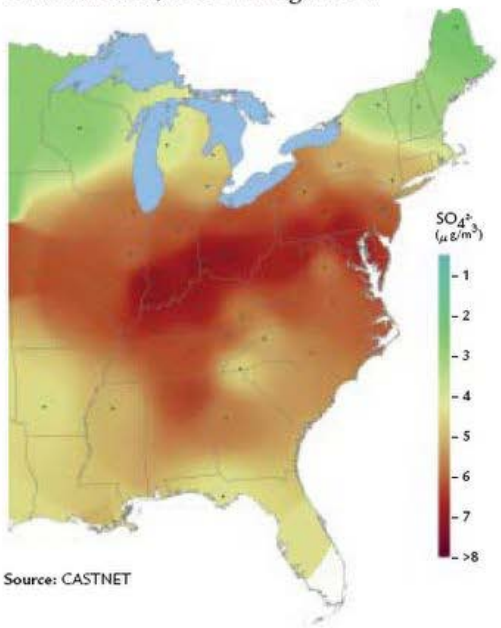
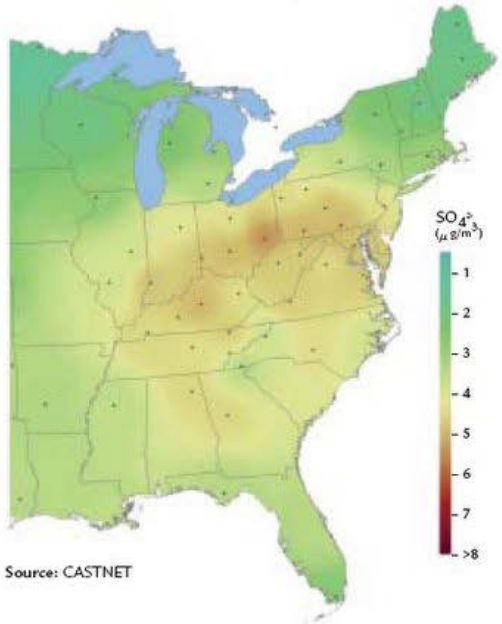


Figure 17b: Annual Mean Ambient Sulfate Concentration, 2002 through 2004



Another application of Tabarrok's theory: "the" space program. (Just the fact that people use "the" to refer to what are, or at least should be, a wide variety of efforts, as in almost any other general area of human endeavor, should give us the first big hint that something is very wrong with "it"). For global warming we may be letting our fears outstrip reality; in "the" space program we have let our hopes outstrip reality. Much of what NASA has done over its nearly fifty year history, for example, would have been far more effective and self-sustaining if done several decades later, in a very different way, on a smaller scale, on a much lower budget, and for practical reasons, such as commercial or military reasons, rather than as ephemeral political fancies. The best space development strategy is often to just to wait and learn -- wait until we've developed better technology and wait until we've learned more about what's available up there. Our children will be able to do it far more effectively than we. I understand that such waiting is excrutiatingly painful to die-hard space fans like myself, but all the more reason to beware of deluding ourselves into acting too soon.

In both the global warming and space program activist camps you hear a lot of rot about how "all we need" is "the political will." Utter nonsense. Mostly what we need to do is wait and experiment and learn. When the time is ripe the will is straightforward.

A million-yuan giraffe, brought back to China from East Africa by a Zheng He flotilla in 1414 (click to enlarge). Like NASA's billion-dollar moon rocks, these were not the most cost-efficient scientific acquisitions, but the Emperor's ships (and NASA's rockets) were bigger and grander than anybody else's! In the same year as the entry of this giraffe into China, on the other side of the planet, the Portuguese using a far humbler but more practical fleet took the strategic choke-point of Ceuta from the Muslims. Who would you guess conquered the world's sea trade routes soon thereafter -- tiny Portugal with their tiny ships and practical goals, or vast China with their vast ocean liners engaging in endeavours of glory?

Posted by Nick Szabo at 10:42 PM

14 comments:

Craig Mackintosh said...

There is certainly truth in what you're saying. Rushing headlong into 'solutions' that have been badly thought through can leave us battling narrow and/or corrupt industrial motivations that magnify our problems rather than shrink them. Having said that, I must wonder what our situation would be today, here in 2007, if we had paid heed to global warming warnings back in the '80s. I feel the need to counter that waiting can be tantamount to neglect. 2006 has, finally, brought the topic of climate change into the mainstream media - and for first time reasonable portions of society outside of scientific and political circles are beginning to sit up and listen. When you consider that consumer influence, and consumer education, has the largest impacts on energy consumption - this is none too soon.

Considering the accumulative/committed nature of global warming, I would be tempted to exchange "wait and learn" with "make haste slowly".

6:33 AM

Brian Dunbar said...

Excellent post as always.

A potential decision is like an option, making the decision is like exercising the option. Uncertainty raises the value of any option which means that the more uncertainty the more we should hold on to the option, i.e. not exercise or delay our decision.

Is this folk wisdom tarted up in academic language?

As a young Marine Ii was introduced me to the then startling notion of 'burn a minute' - that is before you run off into the woods after the bad guys while making up the plan as you go, take a deep breath, think hard for a minute about what you know and the resources you've got.

The best space development strategy is often to just to wait and learn -- wait until we've developed better technology and wait until we've learned more about what's available up there. Our children will be able to do it far more effectively than we. I understand that such waiting is excrutiatingly painful to die-hard space fans like myself, but all the more reason to beware of deluding ourselves into acting too soon.

Wince.

I see myself there. Yet anything worth having is worth waiting for.

And too - I don't think that our own humble effort at Liftport is pushing things. We're not demanding that someone (anyone) fund us today - we're studying the issue to see if it can be done, and if it can be done can it be done as a private venture? We'll find out.

7:37 AM

A said...

An excellent post, but I disagree.

Firstly, I think that your argument about the space program may be true. Your argument about Apollo may be true in hindsight, but it still had significant benefits, not just technologically, but in terms of its effect on the national conscience.

But, fine. I might be willing to grant that one -- but as you say, these are just examples, and there's millions of them. If you really need an example of a national "crash-course" project that was necessary in the strictest sense, I'd point to the Manhattan Project. Again, we might not have needed it in the end. But by all measures, it was a success and the goal of beating Germany to the bomb was arguably an important one.

I'm sure I could come up with some more examples of when the "national will" has served and important function (The New Deal; Lincoln in the Civil War; Hamilton). But I don't think that debunking the "necessity" of the space program (again, in hindsight) is a game-winner against global warming.

Second, and more importantly, there's an important structural argument for attacking global warming head-on. At best, you present a possible argument against a means of achieving the goal (government inefficiency seems to be where you're hanging your hat), as opposed to market incentives, but that's not an indictment of the urgency.

What concerns me is that this is the sort of problem that, if it's really as bad as some seem to think it is, the negative effects will be severe even if we succeed wildly: positive feedback effects, plus just the inertia of the petro-economy, are putting us in a position where no matter what we do, we still might not be able to change course fast enough, and by the time it's "politically exigent" to do so (when we're all wearing SPF 100 and cities start flooding), it might be too late. And even that scenario says nothing of the infrastructure that will have to be repurposed once we have to start dealing with the negative externalities of warming, leaving less available for adjustment).

Put more simply, the window for investment in the modern economy has shrunk from decades to just a couple of years: we're really not looking to long-term problems like we used to, and even a 25-year perspective might not be enough. And, much like Germany getting the bomb, it might not be worth taking the risk.

Third, *huge* economic benefits will accrue to the countries that manage to get ahead on the renewable/sustainable tech curve -- whenever the oil fields start to run out, whether that's sooner or later, whoever's holding those cards will be the next Rockefeller.

This lesson follows from some of the major advances that came as the result of government "crash" programs in the 20th century, and I'm not talking about the "space program" -- not just the Manhattan project: the interstate highway systems, radar (microwaves), the TVA... the list goes on. This is a good investment to get behind, and it's precisely the sort of long-term project that's the best target for government assistance.

All that said, you make a good point about the romanticising of the space program -- one that stands alone from the global warming argument. We've got much more important things to work on than a moon base. Cheaper launch vehicles, certainly (satellite tech is still important), but Mars can wait, I think.

4:59 PM

Anonymous said...

A word to the wise: spend a little time over at Climate Audit before you put any serious investment into worrying about AGW...

7:22 PM

Nick Szabo said...

Craig: Back in the 1970s and 80s many scientists thought a bigger threat was the possibility of entering a new ice age. It's certainly a good thing we didn't heed _those_ warnings. Warnings should not be heeded unless the are probable with high expected damage, or the cost of heeding them is low, or both. The cost of heeding global warmining warnings, especially the more extreme and improbable versions, is very high and potentially catastrphic. More catastrophic than the worst case global warming scenario of significant probablity. If we've learned anything from history, especially of the last century, we should have learned that politicals, especially large-scale political experiments, can be vastly more destructive than nature.

It costs nothing to sound plausibly hysterical, and there are thousands of plausible apocalyptic warnings that turn out dead wrong for every one that has more than a grain of truth to it. Currently there is a great fad for such warnings surrounding global warming, which in and of itself has far more than a grain of truth to it, the authority of which is taken advantage of by vast numbers of horrid sounding scenarios of very high actual unlikelihood.

For this and other reasons, it's a very bad idea to overreact to errors in one direction by being biased in the other direction. That's part of Tabarrok's wisdom -- the way to resolve error is to patiently experiment and observe and learn, rather than to compensate with errors in the other direction and then think one has reduced uncertainty enough to properly act.

You link to a good article on biofuels and to what extent they are really a solution to global warming. Biofuels raise the very important issue of what counts as "carbon" for tax or tradeable rights purposes. This is one of the great uncertainties we need to resolve before committing large chunks of our economy to a particular, possibly quite flawed carbon accounting scheme.

Brian: I feel your pain. I consider space fandom to be a wonerful kind of entertainment, a more realistic and satisfying version of watching _Star Wars_, albeit not necessarily any more practical.

However the realism means that this fun can be put to practical use as long as one is not too overly religious about the specifics. (An example of irrational and costly beliefs are those who still insist on the ancient von Braun sacraments of space station, then moon base, then Mars base, etc. series of "next logical steps" that all of us are suppose to agree on and fund).

In your case, I suspect there are a variety of near-future applications of carbon nanotubes, but the largest-scale of them are unlikely to be among the more imminent ones. Of course you know more about carbon nanotubes and space elevator engineering and economics than I do; I'm just applying generalizations I've learned in other areas. But my guess is that those near-term dirtside applications will, along with practical automation research and other commercial areas, probably do far more to advance future space development than anything NASA is now doing, or even that an immediate direct stab at the ambitious end goal by anybody else will do. Reverse spinoffs, in other words, are where the real action is.

8:48 PM

Nick Szabo said...

a: There are certainly a few examples of beneficial government crash programs one might choose (out of the far greater number of duds and wrong directions), but I'm not sure you've selected them. And I'm not at all convinced that we have learned how to distinguish the successes from the duds ahead of time.

The interstate system subordinated the natural evolution of transporation economics to military needs. It has been a big cause of urban sprawl, the replacement of energy-efficient rail transport with wasteful trucks, and generally the creation of car-dependent culture that now makes solutions to global warming so difficult and potentially so devastating.

The nuclear bomb might be a better example, except for it being, even more than global warming until quite recently (and arguably even now) the most important threat to the environment and civilization. Instead of so much fear about Germany getting the bomb (they had chased out most of their good physicists and they never got very close), far better would have been to use the winning of World War II (quite obvious by the time of the Almagadoro test, much less by the time of Hiroshima and Nagasaki) to negotiate a universal nuclear arms ban while all nations were still in the same position of not having the bomb. This would have been far easier to enforce than the mostly successful chemical arms ban. It's a pipe dream now but it would have been practical during the short window after WWII. This is actually a classical Tabarokian irreversible decision that we made with too little information -- in this case too little information about and too much emphasis on the immediate threat of Germany instead of on the long-term problems caused by a world full of nuclear bombs. Now we are stuck with increasing proliferation and the spectre of terrorist threats emanating from the nuclear arms races that have spread across the planet since the Manhattan Project. Not to mention that nation-states are still at this very moment aiming thousands of nuclear weapons at each other, in casse you think that threat disappeared with the end of the Cold War.

Furthermore, comparing Manhattan Project to global warming solutions is apples to oranges. The nuclear bomb project itself was merely a matter of physics -- the scientists didn't usefully (and couldn't have usefully) worry about the political or economic consequences of it. The main problem with global warming is not the physics of it (even though its science, both in terms of problems and solutions, is more uncertain and far more complex than the problem of nuclear explosions was in 1941), it's the social problem of convincing over a billion carbon dioxide polluters to knock it off. Nobody's done anything like that in human history. In some respects the U.S. acid rain market came close, but that was mostly a domestic issue and the polluters were almost entirely large-source.

The last century was full of well-intended large scale political experiments devastating economies and environments and even genociding people. There are far more ways to devastate the economy (and thus also devastate the environment) by a panicked political reaction to global warming than the few (and probably not, so far, well characterized) number of ways to successfully reduce greenhouse gases without substantial harm to the economy. We'd better be quite sure that we have one of the correct ways before we proceed with large-scale political and economic experiments.

BTW, the "huge" economic benefits will only accrue to the technological leaders if they are actually leading down what turns out to be the proper path. But governments more usually lead down the wrong path. It's by small-scale experiments with a wide variety of different paths, like the start-ups in Silicon Valley, that society discovers what the good paths actually are.

On scary positive feedback scenarios: almost all of these are the kind of wild speculations, unfalsifiable or supported by slim evidence, that Tabarrok warns us to heed at our peril. They are the very kind of uncertainty which are probably extreme error and for which the cost of a solution is far too high: these are the best circumstances in which to heed Tabarrok's adice to ignore the hysterical noise, wait, experiment, observe, and learn, and only make expensive investments when we actually know quite well what we are doing, in terms of the _solutions_ as well as in terms of the problems.

BTW, lest you think I'm being dogmatic here, let me present a scenario in which it _would_ make sense for government(s) to act on a large scale and quickly: we detect an asteroid that will, with high probability, strike earth and cause many deaths, environmental damage, and hundreds of billions of dollars of damage. In such a scenario the information we have is clear. Orbital mechanics is a vastly simpler science than climatology. The uncertainties themselves, in terms of statistical error bars and how those error bars can be reduced with more observations, are far better understood. Thus the probability of the threat is very well understood, the costs reasonably well understood, and the solution reasonably well understood (like Apollo, it's a physically very simple problem that mostly just requires scaling up well characterized simple systems). Thus even though it could be very expensive, and might depend on our warning lead time be extremely urgent, as long as the expected damage reduction outweighs the expected cost it makes sense to act as quickly as is necessary. In such cases where there is good reason to be confident in one's numbers there is good reason to be confident in the expected cost/benefit calculations. This is so far nowhere near the case in global warming, especially when considering the political and economic risks of destabilizing our transportation and energy infrastructures and of setting up powerful new political bureaucracies. We have much learning to do, and many low-cost experiments to try and observe, before we can properly tackle global warming in a large-scale political way.

10:00 PM

Brian Dunbar said...

N: *In your case, I suspect there are a variety of near-future applications of carbon nanotubes, but the largest-scale of them are unlikely to be among the more imminent ones.*

No doubt. When we announced our CNT project in New Jersey we received queries from guys who wanted to build fly rods and sporting equipment using CNT. Not the big players - one fellow that stands out builds custom fly rods that cost more than my (used) car.

N: *Of course you know more about carbon nanotubes and space elevator engineering and economics than I do; I'm just applying generalizations I've learned in other areas.*

I doubt that - I just work here. More, while I've absorbed a great deal just hanging out there are great mucking gaps in my knowledge of 'how things work'. I try to make up for this by not shooting my mouth off until I know that I know what I'm talking about and reading a great deal.

N: *Reverse spinoffs, in other words, are where the real action is.*

Which is why we're 'The Liftport Group' - the idea is that the diverse companies that make up the group will support themselves on a particular aspect of enabling technology - CNT, Robotics, Media - and fund the main effort.

I use the analogy of 'booster rockets' when I'm talking to techies and fen but .. I like the term "Reverse Spinoffs".

2:20 PM

A said...

Nick, I think you're being a little bit disingenuous here. Nuclear proliferation and suburbanization have always been pet political issues of mine, so you won't find any disagreement from me about the negative externalities of the highway system or the race to the bomb. But I'll let you draw me offsides for the sake of argument.

W/r/t the Manhattan Project, the relevant question isn't the political consequences of developing the bomb, but the fact that the government basically picked up all the best physicists in the country, dropped them in Los Alamos, said "make this," and it worked. The logistical issues involved in that project were mind-boggling, and unprecedented, but thanks to General Graves (and to some degree, Oppenheimer), the project itself was successful. I think that if we're talking about renewable technology, the analogous project wouldn't be forcing the nation's scientists to "develop solar power," or the like, but merely to say "OK, we need a sustainable alternative to oil. Go." Remember, Los Alamos worked on uranium and plutonium bombs in parallel, and the latter type required some very serious innovations in fields like explosives.

You make a better subpoint about the Manhattan project being an irreversible decision that I agree with, but that's something of a red herring as well. While in hindsight we know that it might have been better to wait,

(a) We don't know that slow development of the bomb would have been better. There's a very good argument that the Hiroshima and Nagasaki disasters were an important wakeup call for the antiproliferation movement, because they showed us just how horrible the effects of a nuclear attack really are. That might not have been the case if there'd been a mutual buildup b/w the US and USSR.

(b) I think there's also a good argument that bombing Japan -- while admittedly horrible, and I think the Nagasaki decision is indefensible -- was one of the best possible situations for a first attack, because Japan had no response capability. If the first nuclear attack had been against a country with retaliation capability, the revenge dynamic could have been very nasty indeed.

Now, that's admittedly speculative, but I mention it to point out that your "foreclosure" argument doesn't address other possible outcomes, nor would it have been a useful policy guideline when the Manhattan Project began. "Bad stuff might happen" is not a useful bellwether.

OK, so, moving on to the global warming argument specifically -- at this point, I'm not really sure what your argument is. What sort of government-action scenario are you envisioning? Personally, I don't see any reason why we couldn't use incentivizing to encourage small-scale development of the Silicon-Valley variety you describe. I also don't see why we couldn't do a large-scale, phased shift of petroleum subsidies into renewable development. At the very least, that's a good economic move, simply on the basis of ROI of renewables versus oil (the latter requires a continual resupply -- it's not cost-effective).

Your asteroid example is informative, I think, if not completely on-point. Allow me to tweak your hypothetical just a bit. Say we have a very large body that might hit Earth, but we don't have enough information to know for another twenty years. Do we sit around and collect information, or start the crash program now? We know that other tech benefits might accrue from the crash program, so my vote would be there. The key issue, I think, is "lead time," and risk versus return. If the global warming scenario is correct, then it's likely that our lead time won't be sufficient, if only because we really can't siphon CO_2 out of the atmosphere fast enough, let alone just turn off our CO_2 output all at once (and that's what I mean by "positive feedback" -- greenhouse trends accelerate/have inertia, so they have to be addressed preemptively).

As a footnote, it's worth pointing out that the economic benefits to sustainable energy technologies aren't illusory, nor contingent upon a warming scenario -- regardless of whether you believe in peak oil, it's a given that petroleum reserves will eventually run out or become prohibitively expensive. Therefore, the countries that can get ahead of the supply/demand curve stand to become very, very rich. Additionally, we're one of very few countries that are properly positioned to lock-in to the supplier position, but the first-mover advantage will be huge.

Furthermore, I think there's a powerful counterargument that if we really do get to a point where energy needs or warming concerns are completely out-of-whack with reality, we risk putting ourselves in a situation where a giant bureaucratic program becomes the only solution, which, by your own terms, isn't a fun proposition. It seems to me that, given the potential benefits, it's better to prevent than triage.

(Also, I only referenced the Tennessee Valley Authority by acronym (so I'm sure it was missed), but if you're going to hit on one of my strawmen, I think that's a better one, since it's energy-specific. Care to discuss that one instead?)

2:57 PM

Nick Szabo said...

"a", don't accuse people of being disengenuous when you're the one who seems to be pulling the bait and switch here. You raised the Manhattan Project, TVA, and the interstate highway system as examples of successful government programs, thus implying that they are analogous to hypothetical government project(s) you favor to solve the global warming problem -- since that is our topic of discussion. I've pointed out that the nuclear bomb and interstate highways are not usefully models for tackling global warming because (1) global warming is primarily a very difficult economic and political problem and only secondarily a scientific problem, (2) even the science part of global warming is less certain and far more complicated than the problem of making a big nuclear powered boom (given the already mature knowledge of e=mc^2, radioactivity, the properties of uranium, etc. that existed in 1941) and the problem (solved long before Eisenhower's time) of building auto-capable divided highways from point A to point B. The TVA is an even less convincing example -- indeed it's a major caution about what we must be on guard to avoid -- which I address below.

Now you seem to be saying that, while you admire these old programs (at least in terms of their immediate success in fulfilling their narrow goals), they're not really your models for success against global warming? Please be more clear on what specifically you are proposing when you say that government should "encourage" or "incentivize" renewables instead of petroleum. Are you proposing tax breaks for specific technologies? Government-directed R&D programs? Government cash prizes for hitting particular goals? Your invocation of Manhattan and TVA implied a centralized government-directed program; if instead you are talking about tax breaks, taxes, pollution markets, or something else please let us know the specifics. My argument is against what you seemed to be implying, namely a centralized government-directed program. If you have some different specific proposal, then knowing the specifics I can debate that on the merits.

As for the Manhattan Project being an unprecedented logistical feat, not at all. The Roman legions, the Genovese _maone_, the Portuguese conquest of Asian trade routes, the Dutch East India Company, nineteenth-century industrial corporations, the overall WWI and WWII military-indstustrial mobilizations, Germany's blitzkrieg, Japan's initial conquests in the Pacific during WWII, the Holocaust, and so on were all unprecedented organizational feats for their time. The Manhattan Project was neither larger nor more complicated than many other large techno-industrial projects. Furthermore, it benefitted from a small but crucial group of geniuses (i.e. Jewish refugee scientists from Germany and environs) who were highly motivated to combat an enemy who hated them in particular. That's not a normal or repeatable feature of government programs.

Examples of government-related innovation tend to be either wartime necessities (as in the war-related institutional innovations I listed above, which tend to be irrelevant or actively destructive to economic organization), or serendipitous successes in a sea of expensive failures (Internet, radar), or would have readily been invented by the private sector anyway (again Internet and radar: the private sector independently invented Ethernet, bulletin board systems, e-mail and many other precedents to today's Internet, and radar takes advantage of an obvious feature of radio waves that would have readily been seen as useful for commercial aviation had not the military seen it first) or were old mature technology that government merely took over and artificially scaled up. Take your example of the TVA. The the first half century of electricty hydroelectric dams were privately designed and built. Government mimicked these technologies and organizations and scaled them up and made them more environmentally destructive. This was not at all an innovative process, but much more a process of taking over mature technology and organization developed by private industry, but on a larger scale and with a legal immunity that allowed wholesale destruction of private competitors (the actual innovators), the environment, and of productive and of vast areas of locally prized private land, similar to what has recently occurred in China with the Three Gorges Dam.

The economic and environmental and poltiical _costs_ as well as benefits of the TVA, the Manhattan Project, and the interstate

highway system are crucial to our discussion, because the economic and environmental costs and benefits of any governmental programs to address global warming are crucial to our discussion. And because so often government mega-projects legally immunize themselves, hiding destruction of the environment and of third parties that private parties would often have to be legally and financially be responsible for.

I've already pointed out that given a _simple_ physical goal (make a big nuclear explosion, put a man on the moon, build a road from point A to point B, stop an incoming asteroid) that merely requires a large temporary corporate-style organization and a lot of tax money, government can generally accomplish that simple goal -- _if_ we don't mind spending the money, and _if_ we don't care much about the side-effects (which government generally legally immunizes itself from) or the long-term effects.

I gave the asteroid problem as an example of a circumstance where the problem would be simple and it would be clear that the benefits outweigh the immediate costs, side-effects, and long-term effects. Once things get complicated, however, political bureaucracies (or any other singular organizations) are generally incapable of effectively making the required innovations and trade-offs.

Reducing global warming is neither a simple physical goal (the climatology is anything but simple) nor is it at all a goal where good tradeoffs between costs and benefits are easily and objectively characterized. This makes it a very bad candidate for a crash government project. Instead, the distributed nature of global warming (over a billion significant emmitters of carbon dioxide and numerous costs and benefits, with a vast number of subtle and often subjetive tradeoffs to be made) make it an eminently suitable candidate for a highly distributed solution such as a market. But since we have such little experience with fully international pollution markets, or pollution markets involving large numbers of small emitters, or indeed international pollution regimes generally, we need to start slowly and gently -- as in fact the Europeans are doing.

Indeed, the de facto "Gentle Kyoto" currently being practiced by Europe, with pollution permits trading for the first few years at very low prices, and in the process figuring out the crucial, subtle, and often unexpected problems involved in measuring and accounting for "carbon", is a very good way to go -- and vastly better than many of the potentially devastating alternative crash-programs that panick-mongers have been proposing or the sharp immediate reductions that politicans are ignorantly hyping. (On one side we have complete global warming deniers who totally reject Kyoto and on the other side trash-the-oil-industry-now fanatics -- where are the rational and balanced people in this debate? We certainly should not be taking major political action when the major political actors are so irrational!)

Let's take your example, renewable energy. First, it's not at all clear that this is the best solution to the problem. It may well be that carbon sinks, nuclear power, albedo engineering, sun shades, or some combination of these is a far better solution. "Renewable energy" has far more the hallmarks of a subjective religion (distaste for modern industrial civilization) than of a clear objective benefit compared to the many alternatives. I'm not saying the alternatives are better either, mind you. I'm saying _we don't know_ nearly well enough to have governments commit vast sums one way or the other, or to impose very stringent requirements on industry in order to force one or more of these approaches.

Furthermore, even if it miraculously it could be objectively proven that renewables are the clear best choice over those alternatives, it's not at all clear _which_ renewables are better. Solar? Wind? Geothermal? Biofuels? They all have their adherents and detractors, their benefits and their costs. And there are a dizzying number of alternatives within those broad categories.
There's no single device or technogical milestone here that is the objective goal, in sharp contrast to putting a man on the moon or making a nuclear powered explosive. Instead it's a vast number of alternatives, moving towards a system that will probably comprise thousands of different products (from energy production to transport to heating and cooling to a wide variety of other things) with a wide variety of subtle technical and social tradeoffs that need to be explored. This calls for Silicon Valley style R&D, a wide diversity of small efforts, most of which will fail, the antithesis of a centralized government crash program. And indeed, as we speak there are a wide variety of interesting Silicon Valley renewable start-ups, pursuing far more avenues than you or I or any politicians could ever dream up.

BTW, it's not at all clear that "regardless of whether you believe in peak oil, it's a given that petroleum reserves will eventually run out or become prohibitively expensive." It could turn out that we discover vast new reserves of oil or equivalent (in the deep sea, through coal gasification, tar sands, and so on) that will last for centuries, or that we slowly replace oil with cheaper nuclear and renewables without oil ever getting exceedingly expensive, or both of these. If you look at a solar system scale, BTW, hydrocarbons

are cheap and plentiful. Many comets and asteroids and moons are full of methane and more complex hydrocarbons; Titan has vast methane and ethane clouds, rain, and lakes. It's actually free oxygen that is far more scarce. (This is probably only relevant to earth itself if Tom Gold's plausible theory of non-fossil hydrocarbons is correct, but even if not it's an interesting perspective).

To get back to the main point, solving the highly distributed problem of global warming causing pollution -- highly distributed and separately responsible projects are where the real solutions lie, not in the wasteful practices of political lobbying, which is where government mega-projects soon end up effectively spending much of their resources(take the history of NASA, for example). The key to success is that it's a massively parallel distributed solution with the nodes each responsible, financially and to the extent feasible legally (in terms of environmentally bad side-effects) for and thus well motivated for the economic and environmental success of their particular project. The best role for governments, if they choose to foster effective solutions (as Europe largely is doing right now, but the ideas of many politicians and activists are not), is to set up, test, and debug the measurement, the accounting, and the trading rules that are needed for highly distributed and well incentivized solutions.

In your 20-year warning time asteroid hypothetical, the best strategy is to do more observations and pinpoint the actual probability of the strike. This can almost always be be done, given the simple nature of orbital mechanics, within a few weeks to months of the initial discovery. Then it's fairly easy to objectively compute the expected costs and benefits of the project, and thus to make a rational large-scale political commitment adhering to these calculations.

This is not something that's possible with global warming, because neither the problems nor the solutions can be characterized simply and objectively liked that, and there is no straightforward set of observations that we can do to reduce many of the uncertainties. Instead the biggest uncertainties are in the social institutions and the only way to learn about those is to try them, gently at first, and test them and debug them until they work. Basically the "Gentle Kyoto" (i.e. Kyoto with relaxation of the originally too strict targets) that Europe is currently purusing right now. It's setting up a market which requires figuring out good ways of measuring and accounting for "carbon" (i.e. greenhouse gases). We'd have to solve the measurement and accounting problems for a carbon tax, too, so even if the tax turns out to be better than a market what Europe is doing right now is a very useful and necessary preliminary to large-scale action against global warming.

Another way global warming is different is that it's a much longer-term problem than just 20 years, both climatologically and institutionally. It may take several decades to figure out how to properly account for and measure greenhouse gas pollution, and to negotiate all the treaties we need, and to otherwise develop the effective institutions and technologies we need to tackle billions of emissions on a global scale without risking economic and other kinds of environmental devastation.

9:33 PM

A said...

Yes, "disingenuous" was poor word choice, and I apologize for that. I certainly didn't mean to insult (and I appreciate the debate). :) What I mean is that I don't think that highlighting the political fallout of the Hiroshima and Nagasaki attacks is an on-point criticism of the Manhattan Project -- it doesn't, to me, implicate the decision to start the project in the first place.

You're also right that a clarification is appropriate, although I don't think that the original post is exactly clear in this regard, either -- there's some switching between talk of a "crash program" and overwrought bureaucracies, which is why I was asking for a clarification. And the comparison to the Apollo Program isn't much more on-point than that to the Manhattan Project. I think I've confused the issue with your asteroid hypo, and I don't disagree with you on the consequences of the TVA, so I'll back up and separately address the two plans we're talking about here, i.e. technological and bureaucratic.

First, we're considering a potential "crash program," along the lines of the Manhattan Project. Your military examples are a bit inapposite -- the first reason the Manhattan Project is a useful example, and unprecedented, is that organizing scientists on such a large scale, and toward such a distant goal, was a novel project at the time. I'd also dispute that the outcome was nearly so certain as you suggest, at least at the outset. The plutonium weapon in particular required a number of small breakthroughs; the manufacturing and refinement processes developed were often novel; even the yield of Trinity was uncertain. (Einstein thought the bomb would need a ship for delivery.) Even more to the point, there were two different development tracks, and scientists were switched between them frequently. (Any project that puts Richard Feynman to work designing manufacturing plants is clearly

engaging in some creative footwork.)

At any rate, the point is that a large-scale "crash program" doesn't foreclose flexibility -- in fact, this an excellent example of how an extremely difficult technological and logistical problem could be organized by people with very little knowledge of the specific solutions involved (General Graves, again) given the proper guidance (in this case, from Oppenheimer). In short, (1) I simply don't buy the argument that governments are necessarily "incapable of effectively making the required innovations and trade-offs," (2) You're not highlighting a specific negative outcome, just pointing out that the problem would be difficult (and not, I think, explaining how it could be much worse than the status quo), and (3) Regardless, it seems to me that we're staring down the barrel of consequences that require preemptive, possibly risky action, much like the circumstances that motivated the Manhattan Project.

Perhaps we're just disagreeing on the extent to which the costs and benefits can be "objectively characterized." All I'm saying is that global warming presents a striking example of a "do or die" situation, and a "crash program" could offer substantial economic benefits as well. (This may be more important with regards to the bureaucratic point, which I'll get to.)

(Also: Eisenhower?)

I'm in complete agreement about the ideological nature of the "renewable energy" cult, and I'm not a "trash-the-oil-industry" type, so yes, I'll cast my net a little wider -- let's just call them "sustainable" technologies. And there's clearly a whole spectrum of possible solutions, from more efficient petroleum engines up through cost-effective solar. However, we're not pursuing many of these possibilities very aggressively, and in fact we're subsidizing petroleum to a significant degree.

In that vein, we're also in agreement about the value of entrepreneurship as a solution to the problem -- we've come a long way since the Manhattan Project, and to some degree we can strike a middle ground between "crash programs" of that nature and market solutions, and to my mind this model is just the modern variant, the last step in a line that starts with Los Alamos and runs through Lockheed and Sandia. However, we could significantly increase our investment here. Additionally, I think that the Manhattan Project provides an informative example of how the government can take a more active role in mediating between these projects, given proper scientific advice.

Finally, I disagree that there's no "objective goal" here. On a broad level, we're merely looking for a sustainable technology, any technology, that's cheaper, per kilowatt-hour, than current petroleum tech. You could specify that down, but I think that's a fair phrasing. And granted, there's many, many avenues to that goal, but I think we can agree that it's there, and it becomes a more feasible goal as time goes on, and energy demand rises with the cost of oil.

Falling back on the arguments that there could be new sources of oil doesn't strike me as credible. Shale from Canada is not the answer. We can continue to search for new, exotic methods of petroleum extraction, but the facts remains that (1) Being exotic, they're universally more difficult and expensive (2) The supply is still finite (3) They still pollute (4) All petroleum-fuelled devices require constant resupply, whereas sustainable energy (hopefully) only requires a one-time investment. That's to say nothing of the potential benefits of a decentralized energy grid, nor the risks of petroleum dependence, price shocks, and so forth.

Anyway, the upshot of all this is that there really are many promising energy technologies out there, but (1) We're not funding them now, (2) In fact, we're disincentivizing them by subsidizing petroleum and organizing our policy around it, and (3) If we do win the race to a cheaper energy source, all the issues I highlighted in the previous paragraph suggest that we'll stand to reap windfall profits as oil prices increase and extraction becomes more difficult. You seem to agree that oil prices are destined to rise, and that there will be some sort of market transition -- I'm simply pointing out that a "crash program" serves dual purposes: it has environmental benefits, but it also creates a "first mover" advantage which I think offsets some of the costs. You bring up the example of the Internet, and that's appropriate -- the entire point of a military-industrial complex is to fund expensive, risky projects with uncertain payoffs in order to grease the economic wheels, and perhaps reap the benefits on the backend.

Sadly, I don't think we're in sharp disagreement on any of this, except perhaps on the appropriate extent of government involvement in a "crash program." I'd rather isolate the discussion to the bureaucratic point, which I meant to get to, but now it's late, so I'll return to it tomorrow. What I will say is this.

First, the reason I bring up the "crash program," besides that your post invokes Apollo, is that a technological solution obviates many

of the bureaucratic concerns you're raising: it would present so many advantages over petroleum that it might, by itself, take us a long way toward the goal of reducing emissions, mostly through market forces, and we'd stand to benefit besides. Right now, our policy runs directly counter to such a program, so a radical reversal is in some sense appropriate. And cautioning against committing "vast sums one way or the other" is an unfair characterization, since our policy and our money are already committed heavily in favor of petroleum, and consequently against any competing energy solutions. Now, an abrupt cutoff of subsidies is obviously unwise, but at the same time I'm sure we'd agree that subsidizing a potentially inefficient industry is equally dangerous -- at the very least, some sort of phase-out seems advisable. There's many flavors of middle ground between, as you point out, but that's the first step: at least leveling the playing field.

Second, and more specifically on the bureaucratic point, I do disagree with you here, mostly on the risk calculus issue. I'll get to this tomorrow, when I'm more awake (and I apologize for going on so long only to give up), but for now, I'll just say that I feel that the "wait and evaluate" position is a little bit too late -- I might have agreed back in 1990, but at the moment, it strikes me as a risky justification for the status quo. The situation is, to me, too uncertain, and the risks too great. Furthermore, if there's a window of action, it's likely closing, whereas a regulation decision is reversible.

Again, and put simply, it seems to me that a false start would be preferable to triage, especially if you're worried about bureaucratic inefficiency.

12:45 AM

A said...

All right, I have a little energy, so on to the bureaucratic issue. Maybe I can tackle this before passing out. For once, I'm glad for the delay of moderated comments, and again, thank you for humoring me. [Incidentally, I wasn't trying to snipe at you anonymously earlier, I just blog under this account; I'd be happy to chat. I'm a fan, and the disingenuity comment wasn't meant personally.]

Let's return to the posts at the top, specifically Craig's response and mine. Your first response is interesting to me. Perhaps I'm somewhat confused about your "ice age" point, but I wasn't aware that anyone had argued that we should be warming the planet to avoid an ice age, nor have I heard any plans toward that end. The way I've always understood the argument was that as a result of emissions, we risked reversing ocean currents and ushering in a new ice age. Is that what you're talking about?

At any rate, in either that case or global warming the solution would have been to reduce emissions and petroleum dependence, and in hindsight there's a solid argument that we should have pursued that track more seriously in the 1980s, and that Reagan's reversal of Carter's environmental policies was ill-advised. Our petroleum dependence isn't just environmentally dangerous, it exposes us to enormous political liability from Venezuela to the Middle East to Russia. It would have been nice to get a head-start on all this.

Anyway, the point I think Craig was making is that reducing emissions was a good policy even back then, and it's arguably an even better policy now. The evidence for global warming is clearer (how much information, really, do we need before we act?), the window for action is smaller, and frankly, we haven't achieved very much in that time. So certainly, I agree that we've arguably moved from "proceed with caution" into "make haste slowly," and that's at the very least. As you point out, we've had some experience in this sort of regulation, so moving at a brisker pace strikes me as appropriate. "Patience" was a luxury that we had a few decades ago, and we missed that boat.

OK, I'll try to summarize the other points (apologies for the interminable numbering and subpointing):

(1) While alarmism is a concern, there are certain issues where the consequences are so dire that they require decisive action. Moving forward is a reversible decision, whereas waiting is not. This is true for a number of reasons, but most notably because (a) if the warming scenarios are correct, the window for action is closing, and (b) if we do face warming, we also risk additional demands on our infrastructure that will make it more difficult to act.

(2) There's a lot of evidence for global warming, and it's growing. Furthermore, we've been lax on the issue, so there's a good argument that we need to play some catch-up.

(3) I think it's misleading to argue that "we need to resolve before committing," since we're already heavily committed to petroleum in many respects: sometimes by indirect policies, but often by direct subsidy. I think we could easily argue that our current course is an "error" long overdue for correction. A carbon tax, if that's the solution we choose (and I'm not sure if that's what you're presuming), would only be the second step at best.

(4) There are many potential positive offsets to accelerated action, which was the main point I was trying to make at the outset. Getting ahead on sustainable energy tech, and even reducing oil dependence, would be a big win regardless of the truth of warming scenarios. This is the technological argument we covered above.

(5) Your argument strikes me as non-falsifiable. I'm not hearing a lot of specific scenarios for why moving faster on this issue would be so disastrous, and certainly nothing that weighs heavily against the risks we face and the current evidence. Again, what sort of bureaucratic overstretch are you envisioning here, and what are the specific consequences? Returning again to the atomic bomb: I think you could have made a plausible argument that negotiating an antiproliferation agreement in 1945 would have been an unnecessary bureaucratic restraint on our strategic flexibility, but in hindsight we seem to agree that it would have been preferable than to proceed unchecked down the course we'd set.

We always have to make hard political choices. On this issue, the "wait and see" crowd has too long been an enabler for the "warming is a farce" group -- which always had ulterior motives -- and we're, far, far past the time for relaxed, cautious inquiry. You don't have to side with the doomsday prophets to admit that we're really behind on this one.

1:37 AM

Nick Szabo said...

"a": I love to debate too, and your apology is readily accepted.

(1) My general disagreement in your look back at history is that you're cherry picking a handful of good government projects and ignoring the baskets full of bad ones. And you're ignoring the bad consequences of the programs you've chosen in favor of the good consequences, and then claiming that discussion of the bad consequences is somehow off topic. It is most of the topic. As if you, unlike almost all of the billions of other people who've tried, can make government work in its most ideal mode and magically avoid the nasty parts. On this we are now just talking past each other; we each think the other is off topic.

(2) You're still not making specific proposals for global warming analogous to the TVA and Manhattan Project examples. It's hard to rebut pious platitudes. "Renewable energy"? I'm all for it and I encourage you to put your future legal skills to work for a renewable energy company if you like. Specific programs? Almost any specific government program will probably have major problems, anticipation of which politicians can cleverly avoid by never actually getting around to making specific proposals, until the day they introduce and pass legislation that is then very hard to revoke. BTW, I reccomend when they let you start choosing your classes to take a legal drafting class. There you learn how specific and careful you need to be to draft a good law, and why it's so easy for politicians to enact bad laws based on wonderful platitudes.

(3) What specifically do I fear? My main fear is not specific, it is general. It's that governments will do what they have traditionally done best, namely things like "kill people and break things" as soldiers like to say. In other words, governments will naturally cause wide swathes of waste and destruction in the pursuit of narrow goals. Here are some more specific problems that could easily be a consequence of crash government programs to combat global warming:

* That hundreds of millions of people of poor and lower middle class and rural people will be denied adequate heating and transportation due to overzealous crash restrictions on fossil fuel industries. Even larger and more wasteful government programs will be created to address this, a problem government restrictions on "carbon" will
have created in the first place.

* That the nature of our current fixed infrastructure, ranging from work/residential district separation, to those interstate freeways, to big box stores, and a wide variety of other things, are designed around fossil fuels, and will be devasted by large crash restrictions to fossil fuels or radical and naive redesigns of this infrastructure. Such rapid and in retrospect probably very wasteful changes could

throw tens of millions more people into joblessness and poverty and generally devastate the economy.

* That vast political (but styled as "scientific") bureaucracies will arise that will be institutionally and in effect religiously committed to ideas that turn out to be wrong. They will be institutionally committed to proving they are right even though they are wrong. Their "customers" are not voluntary and there is no process analogous to bankruptcy, so we can't easily get rid of them. The general population may well come to believe their wrong ideas even though they are wrong, and even if they could be readily be demonstrated to be wrong, like a kidnap victim with Stockholm syndrome starts to trust their kidnapper, because unlike a customer they won't have significant separate choice in the matter, and besides, right or wrong the people with the wrong ideas have been given vast sums of money with which to convince us that they are right. And many of them will be "scientists" after all with degrees and everything. NASA is a good current example of this. It marvelously solved a very temporary problem (proving that our rockets were bigger than theres without actually nuking anybody) and has stayed on ever since with one phony futuristic promise after another, consistently wasting vast sums on dead-end projects and distorting our visions of the future. One can readily foresee the following reifications of your platitudes: a National Solar Panel Administration, spending vast sums to manufacture solar panels long after independent investigators have discovered solar panel manufacture is a major source of cancer, a National Fiberglass Administration pushing insulation far beyond what is best for economic efficiency and indoor air quality, a Wind Power Administration confiscating vast amounts of locally prized land and blighting it with hundreds of thousands of large, expensive, and ugly windmills that kill millions of birds, and so on. We could have laws requiring thermostats to be set at cold temperatures in winter and hot temperatures in summer, even though such temperatures can put at health risk or even kill outright a variety of people in a variety of states of frail health. We could have a National Climate and Weather Administrations that keeps insisting that global warming causes greater numbers and severities of storms even though the (small remaining number of) independent researchers have proved that it does not. For that reason government and the political process generally grossly overestimates the damage done by global warming, causing massive and unecessary economic waste, poverty, and suffering in the process of too quckly and radically reducing fossil fuels. (If you find that hypo implausible, keep in mind that something rather like it, but with an opposite set of wrong beliefs, is the case now: our government is currently, or at least has been until the most recent election, run by people who deny any sort of global warming or damage from greenhouse gases is occurring or will occur at all. Many of them also think evolution is a fraud and that stem cell research is evil. Why do you think it will automatically be people who are right, or who you agree with, who will be running government? Rather you should be planning government so that even if it's run by people who you disagree with, or who are just plain wrong, it will still work anyway).

One probable consequence is vast tax hikes when, as is usually the case with government projects, they go far over budget, produce far less value than expected, or produce nasty side effects, assuming government even chooses to deal with the nasty side effects at all. Remember, historically what government does best is to "kill people and break things"; as we can see yet again from Iraq. For government to actually put them back together again is far more difficult. Government failures don't result in the projects get cancelled but, pathologically, usually result in the project getting further funding increases resulting in higher taxes or deficits (future taxes). The only way to confidently prevent the massive waste and potential destruction is to not start up the government program in the first place.

The point is _not_ that we know that these bad things will happen, at least not the specific ones about solar, wind, etc. (we can, alas, be fairly confident about the cost overruns and the pathological political responses to failed programs). The point is not that I'm right about the lack of a global warming connection to storm severity.
The point is that we _don't_ know for sure that about these things, and we don't know that other unforeseen bad consequences won't occur. In fact, with almost all government programs there turn out to be many bad consequences unforeseen even by their opponents. Because of that and many other kinds of uncertainty a centrally and politically managed program is an incredibly bad way to go. Creating new agencies is in political practice an irreversible act -- how many do you know that have been disbanded recently? And under a supposedly anti-government party to boot? Just as the TVA could keep destroying perfectly good land without paying a penalty for that destruction, and the DOE could spew massive amounts of radioactive pollution into the atmosphere and rivers at will, and just as NASA can keep spending vast sums regardless of economic viability, these crash global warming programs, created in a panic, will live on long after their useful life, creating environmental destruction and economic waste far into the future.

(4) As for subsidzing fossil fuels, I'm in favor of scrapping all overt and discriminatory subsdisies in their favor. I'm not in favor of discriminatorily scrapping government services that now apply equally to fossil fuels and other segments of the economy. I am certainly not in favor of re-instituing these same kinds of piece-meal corrupt subsidies but simply in the other direction in favor of "renewable energy." The only kind of discrimination against fossil fuels I'm in favor of is one of a very general nature directly related

to global warming, such as a carbon market or carbon tax. I'm in favor of starting, gently at first, to restrict carbon, probably with a market and if that turns out to not work then with a tax, or with markets for some kinds of carbon and taxes for some other kinds. For either taxes or markets the crucial issue is to properly measure greenhouse gas output and account for it in weighs directly based on the reasonably expected and certain damages from global warming rather than on political selfishness. That's a tall order but we've got to tackle it. Once the system of carbon markets and/or taxes is debugged the noose can be tightened as fast as people and industries and technologies actually adapt, but no faster, and there you have a universal and effective solution to the global warming problem with minimal political risk and free of endless pointless political debates over which technologies are best.

BTW, good luck with your second semester in law school!

11:49 AM

A said...

Nick,

I should probably just drop this as it's clear that we will have to agree to disagree on this topic, but it does bring up a more general issue that I wanted to point out as long as I'm here. I promise to let it go after this. :)

Like you, I've got a background in coding, so I tend to be of the opinion that good design can overcome structural problems, and that's how I approach this topic. Legal drafting notwithstanding, I'm not oblivious to political realities, but it still strikes me that there's a whole host of ways you could craft policies around the pitfalls you're anticipating. Besides the obvious oversight and transparency tropes, periodic checks and sunset provisions seem like good approaches, as well as designing the program to encourage market-based ("Silicon Valley") solutions. And that's just the tip of the iceberg. I think that there's a number of other factors working in favor of my solution, most especially its public prominence, but also its basic emotional resonance (which, as you noted, was also an important factor in the success of the Manhattan Project).

And, of course, none of that even starts to speak to whether this is an instance where we should strike while the iron's hot.

I can see how you'd be especially skeptical about this particular issue given your feelings on the transaction costs of value measurement, but that was why I was trying to define down the problem to finding more efficient technologies, rather than arguing full-bore for rationing of the current system (e.g., a "carbon tax" or a Kyoto-flavor protocol) -- it still seems to me that there are various sectors of our energy economy that are more "fungible" as far as substituting in new technologies (notably, the power production system) and others that aren't (automobiles), but relieving some of the pressure on the former certainly feels like the best way to engage in effective regulation/rationing of the latter.

It's also interesting to me that you bring up the issue of fixed infrastructure, because I did mention that I see that as one of the key issues that needs to be rolled up in a comprehensive solution. It's clear that this isn't a problem that can be tackled without coming to grips with the problems of suburbanization and gasoline dependence, but one of most basic arguments in favor of sustainable technologies (solar, notably) is that it could allow off-grid, small-scale production -- at any rate, I certainly think that the infrastructure problems are a _reason_ we should look at the problem more broadly, rather than hoping that piecemeal solutions will figure it out. It's certainly front-and-center on my list of specific goals.

I simply don't think that you can only take the government-skepticism side of the coin and leave it at that. The market has tunnel-vision problems as well. Most disturbingly, to my mind, is that the market in the U.S. is increasingly short-sighted, especially in recent years, with the windows for investment return (especially in VC projects) shrinking from decades to a few years at best. Additionally, we're talking about goals that tend to benefit the country on a very broad basis, rather than specific sectors of the economy. Global warming, and our energy production problems more generally, require a broad perspective of ROI that the government is, I think, more adequately equipped to handle. Obviously that doesn't preclude the possibility of corruption and inefficiency, but I think it's determinative as far as where you decide to start solving the problem, and how hard you're willing to push it.

It saddens me that you're so set against the viability of so many possible government programs, particularly in an area which strikes

me as so especially well-suited to the task at hand. Many of the problems you point out strike me as real, but things that could be designed around. I think that keeping reversibility, specific goals, and oversight in mind while talking about these things is priority one, but I can't bring myself to throw up my hands in frustration merely because there have been problems in the past -- to me, that's the heart of the debugging process. As I said, I think that this brand of skepticism, while in many respects admirable, has also served an enabling function for various groups with a vested interest in maintaining the status quo. And that reluctance is, to my mind, a large part of the reason why we're now twenty years behind the curve in dealing with this problem. Putting global warming aside, the impacts of suburban culture and oil dependence have been apparent for decades -- the amount of progress we've made on this front is shameful.

Even if you're correct, my feeling is that we need more of a healthy antagonism toward the status quo (the dominant paradigm, as it were), coupled with a keen awareness of the risks we face by moving forward rapidly. I find it puzzling that you can be so cognizant of those risks, but advocate avoidance rather than more direct confrontation. But that's probably a very basic political difference between us that we'll not likely resolve anytime soon. (Although I suspect we might agree on many of the policy specifics were we asked to actually sit down and write a proposal for this problem.)

Also, thanks for the good wishes -- school is going well so far, and hopefully it'll continue that way. Discussing politics, programming, history, and so forth is one of the things that keeps me a little bit sane.

2:56 PM

Nick Szabo said...

A: I agree we'll agree to disagree.

10:01 PM

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